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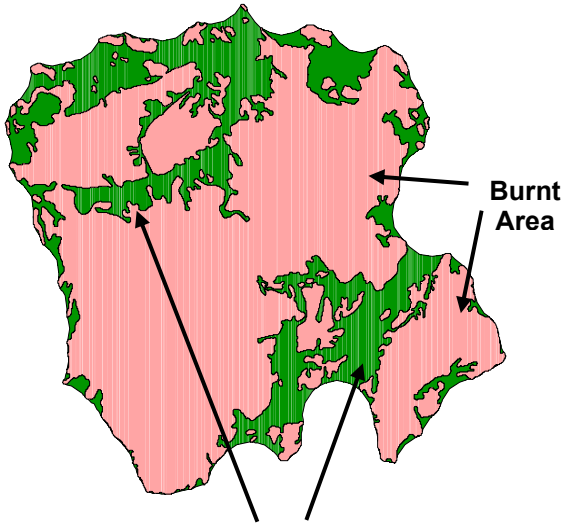
Natural Disturbance Program Quicknote #22

September 2003 *By: David W. Andison*

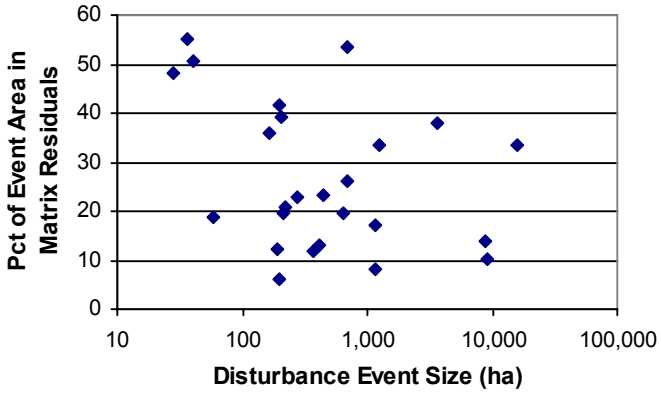
Surviving as (Surprise!) a Matrix Remnant

Most of the unburned residual forest within a fire is not in island remnants. Far more area within a fire survives as corridors that remain attached to the forest landscape matrix. In fact, in west-central Alberta, "*matrix remnants*" account for an average of 26% of disturbance event areas. In the 931 ha event shown in the adjacent figure, the burnt area covers 681 ha and the matrix remnants cover 250 ha. Thus, 27% of this fire event is in matrix remnants (representing about 35% of the burnt area). Recall from Quicknote #18 that an average of just 12% of the burnt area is accounted for by island remnants. Matrix remnants overall contribute three times as much area as do island remnants.

681 ha Burnt (red) + 250 ha Matrix Remnants (green) = 931 ha Event



Percent of Disturbance Event Area that is Residual Matrix



The patterns of residuals are otherwise very similar. For example, the percent of area in matrix remnants shows the same wide variation found in island remnant areas (see adjacent figure). Nor is there any relationship between the percentage of area in matrix remnants and either the size of the fire event, or the number of disturbed patches – both similar to relationships noted for island remnants (see Quicknote #18).

It is revealing to contrast island and matrix remnants from different perspectives. The differences are marginal from purely a pattern perspective. The presence or absence of one narrow strip of forest is often the deciding factor. Furthermore, it is unlikely that the fire behaviour tendencies that create island remnants are any different than those that create matrix remnants. In other words, remnants are remnants.

From a functional perspective, it is the difference between having spatially continuous "corridors" (as matrix) and spatially discontinuous "stepping stones" (as islands). It is *possible* that different collections of species prefer one or the other type of remnant, (although we have little direct evidence at this point), which would mean that the two types of residuals function slightly differently.

We also have to be aware that we have created an artificial division between island and matrix remnants because of our own methods of observation. Matrix remnants are logically described and understood at a slightly coarser spatial scale than island remnants. Consider that it is not possible to define matrix remnants without understanding and defining the disturbance event. Island remnants can be (and usually are) defined and described at only the disturbance patch scale. This is a crucial point worth considering. If we are unable to make the observational connection between island and matrix remnants, it is unlikely we will make either the pattern or functional connections.

For more information on this or other ND Quicknotes, please contact: Dr. David Andison, Bandaloop Landscape Ecosystem Services, Tel.: (604) 939 – 0830, Email: andison@bandaloop.ca, or visit www.fmf.ab.ca